

Industry Report The Brazilian ICT Sector

May 16, 2022

Market Analyst:

Claudia M. Tomaselli Director **TVZ** International VEDP Global Network Partner, Brazil ctomaselli@tvzint.com.br



TVZ International – Global Network Partner, VEDP Av. das Nações Unidas, 10989 - Suite 102A São Paulo - SP - Brazil Tel.: +55 (11) 3384-9051 / +55 (11) 3042-0339

CONTENTS

The Brazilian ITC Sector Overview

3
3
4
6
7
8
8
9
12
13
14

The Brazilian ICT Overview

Demographics

Brazil has a landmass of approximately 8.5 million square km, just slightly smaller than the USA. Its coastline extends about 7,500km along the Atlantic Ocean, making it a desirable location for landing numerous high-capacity, undersea, fiber-optic telecommunications cables.

The country borders all other South American countries except Ecuador and Chile. Most of the Pantanal, the world's largest tropical wetland, covers the country's west-central portion. Both land scape and weather patterns are considerations for siting ICT infrastructure and for their maintenance in some areas of Brazil.

A large majority of Brazil's 214 million people reside along the Atlantic coast or relatively nearby inland. Over 87% of Brazil's population is urban, primarily residing in the southeast among the country's three largest cities, São Paulo, Brasilia, and Rio de Janeiro. With its sizeable base of ICT consumers, Brazil is the only South American nation in which Portuguese is the official and most widely spoken language.

Overview

According to the Brazilian Association of Information and Communication Technology and Digital Technologies Companies (BRASSCOM) <u>Sectoral Report</u>, launched in March 2022, Brazil's ICT Macro sector grew 18.3% in 2021 generating approximately R\$ 600 billion (US\$ 111 billion) in revenues in 2021. As a proportion of GDP it reached 6.9% that year. In addition, the sector generated 1.9 million jobs.

Although Brazil produces relatively few ICT goods, its services sector is reasonably well developed. As measured by telephone, internet, and fixed broadband access, Brazil's existing ICT sector meets or exceeds world levels, except per capita mobile telephone usage. Brazilians are already extensive social media consumers, and the country is a pioneer in m-commerce (commerce via mobile phone). Brazil is fifth and sixth in the world, respectively, in terms of total fixed broadband and mobile cellular subscriptions, though 74th and 90th on a population-adjusted basis.

The country has been recognized internationally for the quality of ICT solutions developed in several areas, such as financial services, energy, agriculture, manufacturing, and e-government.

The intensification of the use of ICT in critical segments, such as education, health, and small and medium-sized companies, is essential for the country to reach a new level of development. ICT, government, manufacturing, services, agriculture, and retail will be the industries most impacted by the deployment of 5G in Brazil.

Brazil's 5G spectrum auction was held in October 2021 and raised approximately US\$ 8.5 billion. Deployment of 5G in Brazil could have a US\$ 1.2 trillion economic impact and an increase in productivity of US\$ 3 trillion by 2035, according to a recent study by Nokia and Omdia.

5G spectrum winners are expected to meet various buildout obligations, including providing:

- coverage to 26 capital cities and the federal district by July 2022
- coverage to all municipalities with >30,000 inhabitants by 2029
- 4G coverage to all towns with >600 inhabitants by 2028

- deploying optical fiber network backbone or backhaul networks to municipalities with >20,000 inhabitants by 2025 and to municipalities with <20,000 inhabitants by 2026
- deploying optical fiber networks covering federal highways
- and deploy a private 5G secure network for exclusive use by the federal government.

Sub-sectors

<u>BRASSCOM's Sectoral Report</u> is produced and compiled annually based on data from open sources and international consultancies divides the ICT macro sector into three subsectors:

- IT: software, services, cloud, and hardware, excluding consumer products
- IT In house: corporate digital technologies with other social focus
- Telecom: voice, mobile, data and implementation services.

Data compiled by BRASSCOM indicates that in 2021, the Brazilian IT segment grew by 36.4% and accounted for half of the Brazilian ICT macro sector's production, reaching R\$ 293 billion (US\$ 54.3 billion), surpassing the Telecom segment, which grew by 4.7% last year and reached R\$ 251.7 billion (US\$ 46.6 billion).

As shown in the Chart 1 below, the Corporate IT - which grew 6.4% last year - represents a small percentage of the Brazilian ICT macro sector and is estimated at US\$ 9.8billion. Note that the exchange rate used in the Brasscom study was US1 = R\$ 5,40 (2021).



Chart 1: ICT Macro sectors Production and Growth (BRL Billion)

The domestic market represents the largest part of the revenue of the Brazilian ICT sector reaching R\$ 258.4bi or US\$ 47.86 bi in 2021 where:

- Hardware (Devices and Infrastructure) was responsible for R\$ 125.5 bi (US\$ 23.26 bi)
- Services including IT, BPO and state services accounted for R\$ 69.7 bi (US\$ 12.90 bi)
- Software (Traditional software) for R\$ 40.6 bi (US\$ 7.52)
- Cloud Software (SaaS) and Cloud Infrastructure (IaaS and PaaS) for R\$ 22.6 bi (US\$ 4.18)

In addition, the sale of hardware, software and services in the foreign market grew approximately 36% in the last year as presented on chart 2 below:



Devices account for 91% of the hardware market, while infrastructure comprises only 9%, representing R\$114.2bi (US\$ 21.16bi) and R\$11.2bi (US\$ 2.1bi) of the segment's revenue, respectively.

In the services segment, 41% or R\$ 28.4 billion (US\$ 5.26 bi) of production is turned to Business Process Outsourcing (BPO), while IT services is responsible for almost 48% of the sector or R\$ 33.1bi (US\$ 6.13 bi), and Government services for 12% of it with R\$ 8.2bi (US\$ 1.51bi).





Avenida Nações Unidas 10989 São Paulo, SP BRAZIL

PHONE +55 11 3042-0339

As per the above, within the Cloud segment, Cloud Software (SaaS) is responsible for 52% of the revenues or R\$ 11.7 bi (US\$ 2.15 bi) while Cloud infrastructure (IaaS and PaaS) represents 48% or R\$ 11bi (US\$ 2.03 bi) of the segment's revenue.

The Impacts of the Covid Pandemic in Brazil's Digitalization Drive

The pandemic is serving as a driving force to digital transformation in Brazil. As per a report produced by ISG Provider Lens digital transformation by Brazilian companies has rapidly advanced from concept to execution in recent years, especially as enterprises have pivoted to cope with the effects of the coronavirus and harness the power of new technologies to gain competitive edge.

Under the changing conditions of the past year, contactless customer service solutions, virtual interactions between employees and partners and the use of AI to predict supply-chain disruptions were among the hottest topics for enterprises in Brazil, the report says.

The rapid growth of e-commerce during the pandemic made sales and logistics requirements increasingly complex. Companies sought service providers with expertise in process digitalization, automated data analysis, storage and distribution automation and delivery operations.

Environmental, social and governance (ESG) considerations have also emerged as an important focus for Brazilian firms. Many are working to improve their transparency, ethics, integrity and especially sustainability, driven in part by decisions by investment funds to prioritize ESG performance. Along the way, companies have been remodeling their approaches to raw materials, manufacturing, distribution, and recycling to create a circular supply chain.

New technologies have improved companies' design, production, sales, supply chain and human resources processes and enabled better customer experiences that have boosted the bottom line.

The transformation of business models and blurring sector boundaries are clearly visible in many areas. Digital start-ups, some valued at over USD 1 billion (unicorns), are threatening to disrupt consolidated markets like transport (e.g. Loggi, 99) or banking (e.g. Nubank, Creditas). Mercado Libre, an Argentinian online marketplace with major stakes in Brazil, recently reported that its payment service Mercado Pago Point in the country by far surpassed its merchant service business in terms of volume. MercadoCredito, the platform's credit branch, provides sellers with access to finance (MercadoLibre, 2020). The business-to-consumer (B2C) food delivery app iFood has recently increased the scope of products, offering food supplies and market analysis to restaurant owners (B2B) (Natanson, 2019). The Chinese e-commerce giant Alibaba, as Amazon's AWS, is now offering Alibaba Cloud services to business customers in Brazil (Bnamericas, 2019).

With its E-Digital Strategy, Brazil has developed an encompassing strategy for digital transformation, highlighting some of the core enablers of this transformation as well as providing thematic explorations into the digital transformation of both government and the economy. The strategy acknowledges the changing market environment and puts an emphasis on the emergence of a data-driven economy and new business models, including for agriculture, industry and services.

Nonetheless, digital transformation practices and strategies are still immature among micro and small businesses who play a fundamental role in Brazil's economic and social development as they account for more than 90% of companies, 30% of GDP and more than 50% of jobs in the country.

In general terms, according to the Brazilian Micro and Small Business Digitization Map, a survey conducted by Fundação Getulio Vargas (FGV) and the Brazilian Industrial Development Agency (ABDI):

Page | 6

TVZ International Avenida Nações Unidas 10989 São Paulo, SP BRAZIL

- 66% of micro and small businesses are at levels 1 and 2 of digital maturity (18% are at "analog" level and 48% are at "emerging" level)
- The average digital maturity score of Brazilian micro and small businesses is 40.77 points, on a scale from 0 to 100
- The services sector presented the best results, with an average score of 43.73, while the commerce sector had the lowest average score, 36.75 points. The industrial sector had an average score of 40.49 points
- In terms of "innovating more quickly and collaboratively," companies scored 47.72 points on average, demonstrating greater digital maturity in this area, and showing that they are seizing new opportunities and adopting more agile and collaborative innovation practices
- On the other hand, companies had the lowest score, 35.01, for "establishing new foundations for competition," reflecting difficulties in adapting to the online world and offering more innovative and digital business models
- It was found that companies are using broadband in their operations and moving forward with their data storage policies, but they still make little use of cloud computing and elearning services as tools to boost their productivity
- Cybersecurity is another subject downplayed by micro and small businesses

The 5G Deployment

ICT, government, manufacturing, services, agriculture, and retail will be the industries most impacted by the deployment of 5G in Brazil.

Government (including public education and healthcare) is one of the main contributors to Brazilian GDP, and some of the main opportunities envisaged for 5G in the country are in areas where governments at all levels are the main buyers.

When it comes to improving connectivity, via both enhanced mobile broadband (eMBB) and fixed wireless access (FWA), Brazil still has a major challenge in connecting public services to the internet in a significant part of its 5,650 municipalities, especially in rural and remote areas.

The country has been struggling to offer public services such as healthcare and education in such places. However, the combination of investment in broad capillarity and robust backhaul with high capacity 5G network access can enable sophisticated services such as telemedicine, supporting remote diagnosis, treatment, and monitoring of patients and increasing coverage of healthcare services.

The study conducted by Nokia highlighted that 5G will enable smart city solutions in the country as almost 85% of the country's population live in urban areas, and cities such as Sao Paulo and Rio de Janeiro are among the largest in the world, with several challenges to match their size.

Nonetheless, the range of use cases that 5G can enable for smart cities in Brazil is somewhat limited by the chronically poor financial situation of the country's municipalities. In other words, the use cases that have a guaranteed source of funding and/or business models that do not require large expenditures by city governments tend to be the ones with a higher chance of being implemented.

The study also found that 5G technology will have a positive impact in other sectors such as manufacturing, retail, and agriculture.

A common goal for the Brazilian manufacturing sector is to improve productivity levels. Therefore, 5G-enabled use cases such as the implementation of HemoSonics (https:// hemosonics.com/) provides in vitro diagnostic platform to characterize hemostasis – the balance between bleeding and clotting – in a variety of acute care clinical settings. HemoSonics designs, develops, and manufactures in-vitro diagnostic devices (analyzers, software, reagents, quality control materials) and accessories used to aid in the evaluation of blood coagulation properties. automated guided vehicles (AGVs), applied in smart factories and warehouses, allowing flexible path planning and replacing conveyor belts, need to be among the priorities of the sector.

In addition, 5G will enable the location of parts and equipment with a high degree of precision, saving time and optimizing processes.

This study also noted that there are 2,400 farms in Brazil of 10,000 hectares or more, in many cases using highly mechanized, but often offline, production techniques. Opportunities for 5G span the whole process, and many use cases are already mapped in what the sector has called The BRASSCOM study indicates that R\$510.5 billion (US\$94.5 bi) is expected to be invested in the ICT sector in the 2022-2025 period.

2022-2025 Investments

As per the chart 4 to the right, about 42% of it will be allocated to the software industry, while approximately 27% of total investment should go to the services segment, 25% to the hardware, and 7% to telecom services.



Chart 4: Investment Prospects per Sector (BRL billion)

In the same period, investments in the mobility and connectivity segments are expected to total R\$ 617 billion (US\$ 114.3 bi) as detailed in Chart 5 below.



2022 Forecast

As per the Brazilian Association of Software Companies preview of the Brazilian Software Market Study - <u>Overview and Trends 2022</u>, developed in partnership with IDC, Brazil's investment in ITC reached US\$ 71 billion in 2021, placing Brazil among the countries that have invested most in ITC. Below is a graph showing Brazil's share of global technology investments last year.

ITC INVESTMENTS IN 2021 – We (Software, Hardware, Services and Telco)	ORLDWIDE	(P.itt)
1ª USA	— U\$ 1.422	1 9 - 3× 1 3
2ª China	— U\$ 503	
3ª Japan	— U\$ 263	
4ª United Kingdon	— U\$ 171	
5ª Germany	U\$ 164	
6ª France	—— U\$ 125	
7ª India	U\$ 97	OTHERS
8ª Canada	— U\$ 89	U\$ 1.255
9ª Brazil	— U\$ 71	
Source: IDC Worldwide Black Book, Q4 2021		

According to the country manager of IDC Brazil, Mr. Denis Arcieri, expectations for the growth of the Brazilian ICT market in 2022 are the highest in the last eight years, despite a scenario of moderate economic growth in Latin America and a period of elections in our country.

This same study states that investments into the Brazilian IT Sector (Software, Hardware and Services) reached US\$ 46 billion in 2021, outpacing global growth. As shown below, this trend should continue in 2022.



IDC's forecasted that the ICT sector, which includes both the IT and Telecom markets, will grow 8.2%, while, individually, IT will advance 14.3% and Telecom 4%. The Corporate IT market, composed exclusively of companies, is expected to grow 8.9%.

The growth in IT should be driven by the device segment, while the telecommunications segment should be driven by the advance of mobile data, especially with the impacts of 5G.

The IT Enterprise area, on the other hand, continues to advance in terms of the cloud, in addition to the resumption of the IT services market.

The strategic initiatives that should drive IT spending in 2022, according to IDC, are productivity and cost control, customer experience, new products and services, and talent attraction and retention.

Market Trends as per the IDC study:

Improvement in the Components sector

Globally, the semiconductor market should show an improvement in the availability of products, but Brazil will still feel some impact from the delay or restriction of devices that use chips from previous generations and have not had recent contributions. According to Reinaldo Sakis, consumer device research and consulting manager at IDC Brazil, many investments are being made in the manufacture of chips below 10nm (nanometers), but these are not the most demanded in Brazil. Notebooks, desktops, tablets and servers mostly use components larger than 40nm.

As a result, the device market will have a year with some challenges and should show modest growth of 1.9% in units, but large in value (12.6%), generating a total of US\$ 22.9 billion. Sakis explained that the scarcity of some components and products, and the unfavorable exchange rate are the main reasons for the difference between the growth in the volume of units and in value.

Hybrid environments, which include Cloud and traditional IT resources, will be in more than 70% of medium and large companies.

The adoption of the cloud in Brazil has been driven by the need for greater agility and flexibility in the IT infrastructure, and, by 2022, approximately 97% of companies that already use some Cloud model indicated that they will maintain or increase the volume of workloads supported by this cloud.

Adjusting IT security practices to encompass cloud environments will be the main challenge for managers, who will look to specialized service providers for help. In this scenario, the traditional Data Center will maintain its importance for the business and will remain present in more than 87% of companies.

On the other hand, spending on IaaS (Infrastructure as a Service) in the public cloud will reach \$1.9 billion in 2022, up 36% year-over-year, while the private cloud will maintain a more discreet growth pace, advancing about 7.9%, with spending of US\$ 540 million.

Total investment in the Cloud is expected to reach US\$ 33.7 billion until 2025.

Cybersecurity Outsourcing

Cyberattacks are expected to continue to rise in 2022, making managed detection and response (MDR) services continue to gain ground, while the demand for qualified professionals intensifies.

For 40% of those surveyed by IDC, the lack of experts on their teams is a critical factor, and 57% said they will rely on outside help to manage and operate environments with modern cybersecurity solutions.

Given this scenario, spending on security services will almost reach US\$ 1 billion total in the country in 2022, representing an average growth of 10% annually, since the beginning of the pandemic, in

2020. Security solutions (hardware or software) will exceed US\$ 860 million, with cloud protection receiving great attention.

Until 2025 total investments in the segment shall amount to US\$ 8.65 billion.

Increased data management

The use of data to drive business will put Analytics, AI/ML and Data Management on the priority agenda of more than 47% of companies. Edge and 5G contribute to this movement.

IDC estimates that US\$ 2.9 billion will be allocated to solutions and services related to Big Data & Analytics in Brazil in 2022. This corresponds to an increase of 10.8% compared to last year.

Total investments in this segment are expected to reach US\$ 17.5 billion (R\$94.6 bi) by 2025.

In Artificial Intelligence and Machine Learning, IDC expects a growth of 28% in the same period, reaching US\$ 504 million. Machine Learning is expected to be the primary drivers of AI market growth.

The Arrival of 5G

With the realization of frequency auctions, the path to standalone 5G (which does not depend on 4G) is paved in Brazil and, by 2025, it should move about US\$ 25.5 billion, driving the greater adoption of technologies such as artificial intelligence, Big Data & Analytics, Cloud, Security, AR/VR, Robotics and IoT.

The definition of the spectrum, the format for commercialization of licenses and the competition obtained in the auctions show the leading role of Brazil in Latin America. In relation to Latin America, Brazil will take the lead both, in terms of the rules of the game and in revenue conversion, which places the country as protagonists in the 5G offer in the region.

According to IDC, the tripod low latency, high bandwidth (speed) and high density of connections will remove barriers, allowing the development of several links in the technology ecosystem, such as devices, cloud, vendors, operators, software developers and customers, that will give prominence to use cases.

Network as a Service (NaaS) is consolidated

NaaS is consolidated to improve the management and capacity of companies' networks without having to make major changes in teams. For 67.5% of Brazilian companies surveyed by IDC, the main motivation for contracting managed services is the need to expand IT capacity to support business growth.

Device as a Service (DaaS) also evolves

The offer of devices as a service has attracted the interest of new manufacturers and users of printers, desktops, notebooks, tablets or smartphones. With better quality and quantity, DaaS should reach more maturity in 2022.

The increase in device prices is another factor that directly impacts the greater demand for DaaS, as this is a way for companies to dilute their investments in equipment over several years.

The PCaaS (PC as a Service) market alone, which is a part of DaaS, is expected to exceed US\$100 million in Brazil this year, representing a growth of over 21% compared to last year.

Internet of Things gets more pragmatic

In emerging markets, such as Brazil, IoT deployments that aim to reduce costs and increase operational efficiency are stronger in the face of innovation issues. In 2022, IDC projects this market at \$1.6 billion, which represents a 17.6% growth over the previous year.

The growing adoption of IoT in the country will be mainly driven by opportunities to improve the quality, efficiency and customer experience of the product or service. Novelties combining IoT, 5G, Edge Computing and Analytics will support and enable even more real-time data use cases. *Consultative approach gains strength*

IDC predicts a resumption of IT services at 6.7%, surpassing BRL 44 billion in 2022. As companies seek partners that add knowledge, agility and experience to their operations, IT service providers are increasingly consultative and capable of connecting their technical knowledge to their clients' business needs. The reflection of this can be seen, for example, in a 7.6% growth in the supply of managed services, which should represent 47% of the IT services market this year.

Wearable devices take up space in B2B

The wearables market is advancing, including the quantity and quality of embedded sensors. For 2022, IDC Brasil projects that the sector will continue to be heated, with increases of 15.8% in units sold and 17% in value compared to 2021.

Even pressured by the lack of components, the smartwatch market – which is still the biggest focus of manufacturers – also presents growth opportunities, including in the corporate segment. Some brands are already working and launching partnerships in the area of life and health insurance, for example.

Regulatory Frameworks

IT Laws

Brazil is among the 10th highest earning country in the global ICT Market. Against this, properly understanding the Brazilian regulatory scenario from the standpoint of technology use and its consequences, encompassing aspects related to intellectual property, tax and labor impacts, liability scope, consumer rights, online business regulations and many other topics addressed in this project, is decisive for successfully setting up and running companies of any size. Thus, the American Chamber of Commerce based in São Paulo (AMCHAM) has prepared an educational and to the-point handbook allowing entrepreneurs to understand the legal issues involved in the Brazilian technology business. This AMCHAM handbook can be accessed <u>here.</u>

Product Regulations

According to Brazilian regulations, in order for ITC devices to be properly marketed in Brazil, they must first be approved by the **National Telecommunications Agency (ANATEL)** through a Designated Certification Body (OCD) indicating compliance with Brazilian regulatory requirements.

The homologation is usually the last phase of the process of adapting to the quality standards expected for the telecommunication services. This process serves to determine if these equipment work correctly and, mainly, if their operation does not represent risks to human health.

The homologation/approval must happen before the product is available for sale, that is, even before reaching the final customer or the stores. ANATEL believes that this process can protect the consumer and prevent problems in the use of such devices, in addition to guaranteeing a quality standard in communication throughout the national territory.

ANATEL's regulation regarding the approval of products is related to the type of technology used in equipment for the transmission of signals. This means that ANATEL does not have a fixed list of products that must undergo approval, but in fact analyzes the technologies included in products about to enter the market to determine whether approval will be necessary or not.

By this criterion, any type of product that includes Wi-Fi technologies, for example, such as tablets, notebooks, media streaming devices, must be approved. This is also the case for other devices with radio transmission capability, such as recent models of cameras, video game consoles, Smart TVs and printers.

This same criterion applies to Bluetooth transmission, which includes products such as wireless headphones and GPS devices capable of transmitting data through this technology.

Another criterion for the selection of products that must be approved is the assessment of the importance of certain components for the data transmission system. This criterion is related to the types of cables and connectors that are crucial for specific communications systems and therefore require approval. Cell phone components such as batteries and charging cables must also undergo this process.

The list of telecommunications equipment that needs approval in Brazil is quite specific. Therefore, companies acting in this sector must be aware of the categories and requirements applied to their products, so that they fully comply with the regulations.

Telecommunication products must therefore comply with a series of specifications and undergo a series of tests that prove their safety in use and compliance with Brazilian telecommunications regulations.

Understanding the details of ANATEL list of products can be a key factor for any company interested in the Brazilian telecommunications market.

Any company that is not familiar with this list is subject to punitive measures for not submitting their products to the approval process. This punishment can range from losing marketing rights to imposing fines for improperly introducing the product to the market.

The general requirements for ANATEL certification are defined in <u>Resolution 715/2019</u>.

Conclusion

Brazil is an emerging market and so offers a unique opportunity to explore ICT-based social and business innovations. Its growing ICT market gained visibility in the world stage with the adoption of online banking and electronic voting. Brazil currently ranks among the top 15 largest global software and service markets.

Its expressive participation in social networks, the impressive growth rate of electronic commerce and the adoption of technological innovations have been punctuating the country's insertion in the digital economy.

Furthermore, the digital transformation of the Brazilian economy was recently accelerated by the COVID pandemic and is reshaping established markets and creating new ones. This, together with the upcoming deployment of 5G, offers a noteworthy occasion for Virginia companies to explore the opportunities that have arisen in this Brazilian context.

ICT, government, manufacturing, services, agriculture, and retail will be the industries most impacted by the deployment of 5G in Brazil. Investment opportunities span all ICT sectors, with high growth opportunities expected in newer technology segments, such as satellite, IoT and AI, fitting many VA companies' expertise.

Brazil is still protected and highly regulated. Understanding its nuances and establishing solid partnerships is therefore of utmost importance for a successful market entry or expansion.

VEDP Global Partner in Brazil can provide VA companies interested in the ICT market with further information and customized assistance.

List of Trade Shows

Futurecom 2022

https://www.futurecom.com.br/

Dates: Oct 18 to 20, 2022

Venue: Sao Paulo Expo, Sao Paulo, Brazil

Considered the largest and most qualified Event of ICT in Latin America, Futurecom is a complete event joining the hyper-connectivity brought by the new communication technologies in the exhibiting area with an international congress promoting important debates about relevant themes associated to technology, industrial policies, regulatory issues and market demands. With the purpose of increasing the engagement between telcos, corporations and stakeholders, Futurecom is repositioned, adding to its portfolio more than 6 events, being consolidated as an important strategic content and business generation platform.

The last edition of the event had more than 250 exhibiting brands, brought together more than 30,000 qualified visitors from all regions of Brazil and several countries. With a high-level content, it brought together about 4,800 delegates and several attractions of lectures and free content, which added up to more than 240 hours of content.

Ciab FEBRABAN

https://noomis.febraban.org.br/eventos/febraban-tech-2022-o-novo-ciab

Dates: August 9-11, 2022

Venue: Fundação Bienal de São Paulo

CIAB FEBRABAN is one of the largest events in Latin America led to the financial sector and technology area. The event consists of a Congress and an exhibition dedicated to Information Technologies applied to banks, financial institutions, managing credit cards, etc. Are presented and discussed the latest innovations in digital security, software, and other Web technologies beyond the event also stands by his lectures with international speakers and business meetings

Rti Data Centers

http://congressortidatacenters.com.br/9/contatos/

Page | 14

TVZ International Avenida Nações Unidas 10989 São Paulo, SP BRAZIL Dates: April 27 to 28, 2022 (next edition's dates TBD) Venue: Centro de Eventos do Ceará

The RTI Data Center Congress is a biennial even tthat focuses on topics such as: virtualization and cloud computing, efficiency of energy and air conditioning systems, infrastructure management, certifications and trends. At the parallel fair, product and service providers present their new technologies for data center infrastructure.